

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3704774	base (base adj plate)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
L2	42853	(led (light adj emitting)) near3 (array plural\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
L3	3339	1 same 2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
L4	75	3 same overlap\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:44
L5	1091941	(1 2) with (bind\$3 bound fix\$3 fixture screw\$3 adhesive connect\$3 tie tied join\$2 fasten\$2 attach\$3 affix\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:12
L6	32	4 and 5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:13
L7	43	4 not 6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:48
L8	7	"1158812".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:22
L9	2	"11058812".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:23

L10	2	"5870128".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:23
L11	9	("4536778"   "4829324"   "5160403"   "5177500"   "5237347"   "5258778"   "5469199"   "5477259"   "5660461").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 09:25
L12	1	("5870128").URPN.	USPAT	OR	ON	2004/12/29 09:32
L13	3	("5808718"   "5870128"   "5926694").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 09:32
L14	1	("6246429").URPN.	USPAT	OR	ON	2004/12/29 09:33
L15	1872	3 and 5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:48
L16	1117	15 and @ay<="1999"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:49
L17	75	3 same overlap\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:51
L18	650	16 and "17"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:50
L19	24	16 and 17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:50
L20	532	3 and (overlap\$4 stagger\$3 zigzag)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:52
L21	186	16 and 20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:52

S1	42853	(led (light adj emitting)) near3 (array plural\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
S2	1890456	substrate	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 07:49
S3	5825	S1 same S2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 07:49
S4	59	S3 same overlap\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
S5	492730	S2 with (bind\$3 bound fix\$3 fixture screw\$3 adhesive connect\$3 tie tied join\$2 fasten\$2 attach\$3 affix\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:11
S6	38	S4 and S5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 07:55
S7	194307	(chip S1) with (bind\$3 bound fix\$3 fixture screw\$3 adhesive connect\$3 tie tied join\$2 fasten\$2 attach\$3 affix\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 07:55
S8	21	S4 and S7	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:24
S9	20	S6 and S8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 07:55
S10	2	("5260718"   "5510633").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 08:07

S11	17	("4095888"   "4147928"   "4376282"   "4386836"   "4435064"   "4477175"   "4549223"   "4595259"   "4660052"   "4706130"   "4728972"   "4742240"   "4767190"   "4783146"   "4835549"   "4884079"   "5003323").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 08:08
S12	4	("4149091"   "4200788"   "4408230"   "4432017").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 08:13
S13	3	("3555246"   "3560716"   "3983364").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2004/12/29 08:14
S14	29	("4149091").URPN.	USPAT	OR	ON	2004/12/29 08:14
S15	14	("4742240").URPN.	USPAT	OR	ON	2004/12/29 08:18
S16	22	("5260718").URPN.	USPAT	OR	ON	2004/12/29 08:21
S17	0	("6456313").URPN.	USPAT	OR	ON	2004/12/29 08:23
S18	18	S6 not S9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:25
S19	1	S8 not S9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:24
S20	1575	junction adj2 position	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:25
S21	618	(S1 S2 S3 S5 S7) and S20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:27
S22	12874	(S1 S2) with (offset staggered)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:28
S23	8	S21 and S22	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 08:28

S24	376	S21 and @ay<="1999"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/12/29 09:48
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# PATENT ABSTRACTS OF JAPAN

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(51)Int.Cl.

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B41J 2/45  
B41J 2/455  
H04N 1/036

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(21)Application number : 10-083614

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TOTTORI SANYO ELECTRIC CO  
LTD

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(72)Inventor : ONO KOICHIRO

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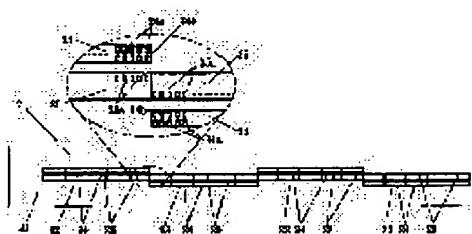
## (54) LED PRINT HEAD

### (57)Abstract:

PROBLEM TO BE SOLVED: To make a print head conform to wide printing by alternately arranging a first and a second light-emitting groups in a serpentine shape on a long substrate, and alternately holding a plurality of rod-shaped lenses corresponding to the first and second light-emitting groups by a holding member in a staggered shape.



SOLUTION: A substrate unit 2 has a first, a second light-emitting groups 22, 23 arranged alternately in a staggered shape in a longitudinal direction of a long circuit board 21 of ceramic or the like. Each of the first, second light-emitting groups has a plurality of LED arrays 24 arranged in a scan direction and a plurality of driving ICs 25 arranged in the scan direction to pair the LED arrays 24 on the circuit board 21. A pair of holding members 32, 33 hold rod-shaped lenses to position nearly right over the first, second light-emitting groups 22, 23 along the arrangement of the LED arrays 24. This print head is thus adapted to wide printing and improved in printing accuracy.



**LEGAL STATUS**

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[Date of sending the examiner's decision of rejection] 22.07.2003  
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]  
[Date of final disposal for application]  
[Patent number] 3500061  
[Date of registration] 05.12.2003  
[Number of appeal against examiner's decision of rejection] 2003-15987  
[Date of requesting appeal against examiner's decision of rejection] 20.08.2003  
[Date of extinction of right]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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CLAIMS

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[Claim(s)]

[Claim 1] The LED print head characterized by holding alternately two or more cylindrical lenses corresponding to the said 1st and 2nd luminescence group by turns by the attachment component while stationing alternately by turns the 1st and 2nd luminescence group who arranged and constituted two or more LED arrays on a long substrate.

[Claim 2] The LED print head characterized by holding alternately two or more cylindrical lenses corresponding to the said 1st and 2nd luminescence group by turns by the attachment component while stationing alternately by turns the 1st and 2nd luminescence group who arranged and constituted two or more LED array and its IC for a drive on a long substrate.

[Claim 3] Claim 1 characterized by having distributed two or more LED arrays which constitute the 1st and 2nd luminescence group to the both sides of the train of said IC for a drive, and having arranged them while having arranged two or more ICs for a drive for driving said LED array to the single tier along with the longitudinal direction of said substrate, or an LED print head given in two.

[Claim 4] Said LED array is claim 1 characterized by having in one two or more LED light-emitting parts which carried out alignment arrangement thru/or an LED print head given in three.

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[Translation done.]